

REMARKS

Initially, Applicant would like to express appreciation to the Examiner for the detailed Final Official Action provided.

Upon entry of the above amendment, claims 1 and 5 will have been amended. Accordingly, claims 1-3, 5, and 6 are currently pending. Applicant respectfully requests reconsideration of the outstanding rejection and allowance of claims 1-3, 5, and 6 in the present application. Such action is respectfully requested and is now believed to be appropriate and proper.

Claims 1-3, 5, and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over MCKENNA (U.S. Patent No. 1,438,54) in view of KOMENDOWSKI (U.S. Patent No. 3,485,123), PARMLEY ("Illustrated Sourcebook of Mechanical Components"), and AIHARA (U.S. Patent No. 5,771,765).

However, Applicant notes that MCKENNA, KOMENDOWSKI, PARMLEY, and AIHARA fail to teach or suggest the subject matter claimed in amended claim 1. In particular, claim 1, as amended, sets forth a chip removing device in a band saw including, inter alia, a pair of brush support bodies that pivotally support a pair of brush shafts with brushes that contact both side surfaces of the saw blade; "a driving mechanism having a drive motor, the driving mechanism rotationally driving the pair of brush shafts pivotally supported by the pair of brush support bodies in a manner such that a rotationally moving direction on a side where each of the pair of brushes provided on the pair of the brush shafts comes into contact with the band saw blade is the same direction of the running direction of the band saw blade; and a removing biasing unit that can bias the pair of brush support bodies in a direction approaching the band saw blade and in a direction separating away from the band saw blade, wherein each of the pair of brush support bodies and each of the pair of brush shafts are provided such that they can rock in the direction approaching the band

saw blade and in the direction separating away from the band saw blade, each of the pair of brushes is biased toward the band saw blade so that the band saw blade is sandwiched with the pair of brushes, the pair of brush shafts are inclined in a forward and downward direction with respect to a running direction of the band saw blade, and each of the pair of brushes is rotated from a blade root side toward a blade tip side of the band saw blade, thereby removing the chips from the band saw blade”.

This amendment is fully supported by the specification, including the claims and drawings, and no prohibited new matter has been added.

Applicant's claimed chip removing device for a band saw blade includes a pair of brush support bodies, with each brush support body pivotally supporting a brush. Each brush contacts one side surface of the blade such that the pair of brushes contacts both side surfaces of the blade. The driving mechanism includes a drive motor that rotationally drives the pair of brush shafts so that the direction of movement of each brush is the same as the direction of movement of the blade. The pair of brush shafts are inclined in a forward and downward direction with respect to the moving direction of the band saw blade, so that each brush is rotated from a blade root side toward a blade tip side of the blade, thereby removing chips from the blade. See particularly figures 3-5. The inclined position of the brush shafts produces a downward brushing action, thereby improving the chip removal from the blade. Accordingly, with the combined configuration of the pair of brushes rotating in the running direction of the saw blade, and the pair of brush shafts inclined in a forward and downward direction with respect to the running direction of the blade, the cutting chips generated by the cutting operation can be effectively and precisely removed from the band saw blade.

In a first position, the biasing unit biases each brush *toward* the blade so that the blade is sandwiched between the pair of brushes; and in a second position the biasing unit biases each brush

away from the blade. The brush shafts 59 are connected to the second rotation drive shafts 47 through universal joints 55 so that the ends of the brush shafts 59 can turn in a range of about 90 degrees. Thus, as shown in figures 6, 9, 11, and 14, the brush shafts 59 are rotatably supported by brush support bodies 61; and the brush support bodies 61 are coupled to hinge plates 63 that are mounted on one side surface of the housing 39 through hinge pins 65 so that the brush support bodies 61 can turn in a range of about 90 degrees. Spring hooks 67 are positioned on the side of the straight upper running portion 23U in the band saw blade 23, and removing biasing units comprising tension springs 69 are mounted on the spring hooks 67. Thus, when the tension spring 69 is parallel to the saw blade, the biasing force is applied to the brushes 57 by the tension springs 69, and the brushes are pushed toward the side surfaces of the saw blade. When the saw blade or the brushes are to be replaced, the operator turns the brush support body against the biasing force about 90 degrees until the brush support body is held in the upper position. See paragraph [0046] and figures 6, 9, 11, and 14. Accordingly, with the above described arrangement, the saw blade and the brushes are easily changed.

The AIRAHA patent teaches a sawdust removing apparatus for a saw including a band saw blade 15 and a brush 19. As recognized by the Examiner, the AIHARA device does not include a pair of brushes, and a pair of brush shafts, as claimed in claim 1. Further, the AIHARA device does not include a removing biasing unit that biases the brush support bodies in direction toward the blade and in a direction away from the blade, and in which the brush shafts rock toward and away from the blade.

The MCKENNA patent is directed to a saw with a pair of brushes. As clearly shown in figures 1-3, the MCKENNA device does not include a removing biasing unit that biases the brush support bodies in a direction toward the blade and in a direction away from the blade, and in which

the brush shafts rock toward and away from the blade. Nor does the MCKENNA device include a driving mechanism including a drive motor that rotationally drives the pair of brush shafts. Further, the brushes of MCKENNA are not inclined in a forward and downward direction with respect to a running direction of the band saw blade, and the brushes are not directed from a blade root side toward a blade tip side of the blade, as in amended claim 1.

Therefore, the MCKENNA patent fails to cure the deficiencies of the AIHARA device, and even assuming, arguendo, that the teachings of AIHARA and MCKENNA have been properly combined, Applicant's claimed chip removing device in a band saw would not have resulted from the combined teachings thereof.

The KOMENDOWSKI patent is directed to a saw with a pair of brushes. As clearly shown in figure 3, the KOMENDOWSKI device includes a biasing spring 28 that biases the brushes toward the saw blade and against the sides thereof. See also column 2, line 69 through column 3, line 9. The spring 28 does not also bias the brushes away from the blade. Additionally, the brush support bodies of the brushes of KOMENDOWSKI do not rock toward and away from the blade. Thus, the KOMENDOWSKI device does not include a removing biasing unit that biases the brush support bodies *toward* the blade and *away* from the blade, and in which the brush shafts *rock* toward and away from the blade, as in claim 1. Nor does the KOMENDOWSKI device include a driving mechanism including a drive motor that rotationally drives the pair of brush shafts, as in claim 1. Further, the brushes of KOMENDOWSKI are inclined in an upward position and are directed from a blade tip side to a blade root side. Accordingly, the brushes of KOMENDOWSKI are not inclined in a forward and downward direction with respect to a running direction of the band saw blade, and the brushes are not directed from a blade root side toward a blade tip side of the blade, as in claim 1.

Therefore, the KOMENDOWSKI patent fails to cure the deficiencies of the AIHARA device, and even assuming, arguendo, that the teachings of AIHARA and KOMENDOWSKI have been properly combined, Applicant's claimed chip removing device in a band saw would not have resulted from the combined teachings thereof.

The PARMLEY document is directed to a universal coupling. Clearly, PARMLEY does not teach or suggest a removing biasing unit that biases the brush support bodies in direction toward the blade and in a direction away from the blade, and in which the brush shafts rock toward and away from the blade; a driving mechanism including a drive motor that rotationally drives the pair of brush shafts; nor brushes inclined in a forward and downward direction and directed from a blade root side toward a blade tip side of the blade, as in claim 1.

Therefore, the PARMLEY document fails to cure the deficiencies of the AIHARA device, and even assuming, arguendo, that the teachings of AIHARA and PARMLEY have been properly combined, Applicant's claimed chip removing device in a band saw would not have resulted from the combined teachings thereof.

Therefore, it is respectfully submitted that there is nothing in the prior art that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claim 1 under 35 U.S.C. § 103(a) over AIHARA in view of MCKENNA, KOMENDOWSKI, and PARMLEY. Thus, the only reason to combine the teachings of AIHARA, MCKENNA, KOMENDOWSKI, and PARMLEY results from a review of Applicant's disclosure and the application of impermissible hindsight. Accordingly, the rejection of claim 1 under 35 U.S.C. § 103(a) over AIHARA in view of MCKENNA, KOMENDOWSKI, and PARMLEY is improper for all the above reasons and withdrawal thereof is respectfully requested.

The Examiner has taken the position that it has been held that the combination of elements known in the prior art to be used in accordance with their known functions is unpatentable as a matter of law absent a showing that the combination has results which are unexpectedly advantageous over the prior art. The Examiner states that each of the claimed elements is old and known to perform the same function as in the present application; and that the combination is unpatentable.

However, it is respectfully submitted that the prior art does not show each of the claimed elements. In this regard, none of the prior art teaches or suggests a removing biasing unit that biases brush support bodies in direction toward the blade and in a direction away from the blade and in which brush shafts rock toward and away from the blade; a driving mechanism including a drive motor that rotationally drives the pair of brush shafts; nor brushes inclined in a forward and downward direction and that are directed from a blade root side toward a blade tip side of the blade, as in claim 1. Accordingly, it is respectfully submitted that the claimed combination is new and includes elements which are new to the art; and that therefore the claimed combination of the present application is patentable.

Applicant submits that dependent claims 2, 3, 5, and 6, which are at least patentable due to their dependency from claim 1 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record based on the additionally recited features.

In particular, Applicant submits that none of the cited prior art teaches or suggests a chip removing device in a band saw including a wear detector that detects a reduction in diameter of the brush caused by wear as a variation of the brush support body in a direction approaching the band saw blade, as set forth in claim 2. Further, none of the prior art teaches or suggests a wear detector

including pushing levers extending from the pair of brush support bodies toward the band saw blade; shafts to be detected that are engaged with the pushing levers and that can reciprocate in parallel to the brush shaft; and a detecting biasing unit that always brings the to-be detected shafts into abutment against the pushing levers, wherein the wear detector detects movement of one or both of the to-be detected shafts and detects wear of the brush, as set forth in claim 3. The Examiner has taken the position that it would have been obvious to add a wear detector to a brush cleaning arrangement. However, contrary to the Examiner's assertions, none of the prior art teaches or suggests inter alia, a wear detector that detects a reduction in diameter of the brush, pushing levers and shafts to be detected, a detecting unit that always brings the shafts into abutment against the pushing levers, and wherein the wear detector detects movement of one or both of the shafts.

Further, Applicant submits that none of the cited prior art teaches or suggests a chip removing device in a band saw including a removing biasing unit including spring hooks that are respectively provided on the brush support bodies and a housing incorporating the main rotation drive shafts and the second rotation drive shaft on the side of the band saw blade, and at positions away from a turning center of a respective universal joint; and tension springs that are resiliently provided between the spring hook on the side of the housing and the spring hook on the side of the brush support body, as set forth in claim 6. The Examiner has taken the position that it would have been obvious to add the springs of KOMENDOWSKI to the AIHARA device. However, contrary to the Examiner's assertions, none of the prior art teaches or suggests, inter alia, a biasing unit including spring hooks provided on brush support bodies, a housing, and tension springs provided between the spring hooks.

Accordingly, claims 2, 3, 5, and 6 are each separately patentable for these additional reasons.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection, and an early indication of the allowance of claims 1-3, 5, and 6.

SUMMARY AND CONCLUSION

In view of the foregoing, it is submitted that the present amendment is proper for entry since it merely corrects an inadvertent typographical error, clarifies the language regarding the driving mechanism and combines elements of claim 5 with independent claim 1, which is an issue about which applicant has already present arguments, and it is also submitted that none of the references of record, considered alone or in any proper combination thereof, anticipate or render obvious Applicant's invention as recited in claims 1-3, 5, and 6. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Accordingly, consideration of the present amendment, reconsideration of the outstanding Official Action, and allowance of the present amendment and all of the claims therein are respectfully requested and now believed to be appropriate.

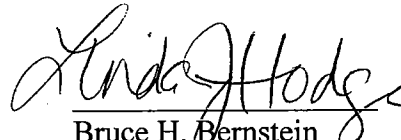
Applicant has made a sincere effort to place the present application in condition for allowance and believes that he has now done so.

Any amendments to the claims which have been made in this amendment, which do not narrow the scope of the claims, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered cosmetic in nature, and to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

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Should there be any questions, the Examiner is invited to contact the undersigned at the below listed number.

Respectfully submitted,
Minoru GOTO

 Linda J. Hodge
Reg. #47,348
Bruce H. Bernstein
Reg. No. 29,027

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GREENBLUM & BERNSTEIN, P.L.C.
1950 Roland Clarke Place
Reston, Virginia 20191
(703) 716-1191